

Notice of Allowability

Application No.

09/714,266

Applicant(s)

HAYAKAWA, SHINGO

Examiner

Leo Boutsikaris

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 3/10/05.
2. ☒ The allowed claim(s) is/are 1-16, 18-24, 26-35 and 37-41.
3. ☒ The drawings filed on 17 November 2000 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 5/6/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

Allowable Subject Matter

Claims 1-16, 18-24, 26-35, 37-41 are allowed.

Claims 1-16, 18-24, 26-35, 37-41 are allowable over the prior art of record for at least the reason that even though the prior art discloses optical low pass filters comprising a plurality of uniaxial birefringent plates, the prior art fails to teach or reasonably suggest, regarding claims 1-15, an optical low-pass filter comprising at least one birefringent plate having a refractive index difference of not less than 0.02 for ordinary and extraordinary rays and wherein the angle between an optic axis of the plate and the normal to a surface of the plate is in the range of 10° to 27° or 61° to 80°, regarding claims 16, 18-21, an image sensing unit comprising at least one birefringent plate having a refractive index difference of not less than 0.02 for ordinary and extraordinary rays and wherein the angle between an optic axis of the plate and the normal to a surface of the plate is in the range of 10° to 27° or 61° to 80°, and regarding claims 22-24, 35, 37-41, an optical low-pass filter comprising a first and a second birefringent plate made of a single crystal of lithium niobate, wherein the angle between an optic axis of the plate and the normal to a surface of the plate is in the range of 10° to 27° or 61° to 80°, as set forth by the claimed combination.

In the low-pass filter of Inoue, a filter comprising lithium niobate plates, the angle referred to in the abstract having a value in the claimed range, is not an angle between an optic axis of the plate and a normal to a surface (instead it is an angle between the normal to the input


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and the normal to the exit planes of the plate). Tagasugi (US 5,471,343, Figs, 4A, 4B) discloses an optical low-pass filter comprising a plurality of birefringent plates, wherein for at least one of which, the angle between the crystal axis of the plate and the normal to the input surface is 15° . However, the birefringent plates in Tagasugi's filter are made from quartz, not lithium niobate, in other words the refractive index difference for ordinary and extraordinary rays is less than 0.02, not greater or equal to 0.02. It is the combination of using the much thinner lithium niobate plates having the claimed property for the angle between an optic axis of the plate and the normal to a surface of the plate, that yields an optical low-pass filter with small size, high optical performance (i.e., lacking ghost and flare spots).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LEONIDAS BOUTSIKARIS
PRIMARY EXAMINER


Leo Boutsikaris, Ph.D., J.D.
Primary Patent Examiner
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